Predictors of personal continuity of care of patients with severe mental illness: A comparison across five European countries

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Abstract

Background: In Europe, at discharge from a psychiatric hospital, patients with severe mental illness may be exposed to one of two main care approaches: personal continuity, where one clinician is responsible for in- and outpatient care, and specialisation, where various clinicians are. Such exposure is decided through patient-clinician agreement or at the organisational level, depending on the country's health system. Since personal continuity would be more suitable for patients with complex psychosocial needs, the aim of this study was to identify predictors of patients' exposure to care approaches in different European countries.

Methods: Data were collected on 7302 psychiatric hospitalised patients in 2015 in Germany, Poland, and Belgium (patient-level exposure); and in the UK and Italy (organisational-level exposure). At discharge, patients were exposed to one of the care approaches according to usual practice. Putative predictors of exposure at patients' discharge were assessed in both groups of countries.

Results: Socially disadvantaged patients were significantly more exposed to personal continuity. In all countries, the main predictor of exposure was the admission hospital, except in Germany, where having a diagnosis of psychosis and a higher education status were predictors of exposure to personal continuity. In the UK, hospitals practising personal continuity had a more socially disadvantaged patient population.

Conclusion: Even in countries where exposure is decided through patient-clinician agreement, it was the admission hospital, not patient characteristics, that predicted exposure to care approaches. Nevertheless, organisational decisions in hospitals tend to expose socially disadvantaged patients to personal continuity.

1. Introduction

The organisation of transitional care from in- to outpatient settings is a key issue in mental health care delivery [1-4]. At discharge from a psychiatric inpatient stay, the patient may be exposed to different ways of organising care with outpatient clinicians. Patients with severe mental illness (SMI) may be exposed to personal continuity, i.e. an approach in which the main inpatient clinician remains responsible for outpatient care; or to specialisation, i.e. an approach in which different, specialised clinicians are responsible for care in different settings [5-7]. These two care approaches coexist in different countries.

The literature comparing these two care approaches has shown a lower number of hospitalisations, shorter lengths of hospital stays, and higher satisfaction for patients treated in the personal continuity approach [8-10]. Several studies have also shown that personal continuity allows a faster and more flexible transition between services and that patients and clinicians prefer this care approach to specialisation [6, 11-14]. However, the literature comparing these two care approaches in terms of other clinical, social, and cost-effectiveness outcomes for the general population has inconsistent findings [5]. Indeed, each care approach can have a specific clinical rationale, depending on patients' needs. Several studies have shown that specialisation is more appropriate for patients with limited needs, moderate disease severity, and the ability to navigate the multiple providers in mental health and social care [3, 11, 15, 16]. Vulnerable groups with more complex psychosocial needs (older, chronic condition, uninsured, etc.), however, prefer, and benefit more from having, a single clinician follow them up over time and across care settings [17, 18].

Although different care approaches are more suitable for, and preferred by, particular subgroups of patients, they may not be accessible to or provided to those subgroups [19, 20]. Indeed, socially deprived patients tend to have less access to specialised care than wealthier patients [21-24]. Difference in accessibility is also explained by the severity of the illness, the complexity of the health and social situation, and the patient's ability to state preferences and to negotiate with professionals [22, 25]. So far, there has been little research describing the characteristics of patients who actually benefit from each of these care approaches.

In addition, the accessibility of specialisation and personal continuity may also be influenced by health system characteristics such as gatekeeping across care lines and delimited catchment areas [21, 26]. For example, patients with a lower socio-economic status have less access to specialised care in the United States, while this association was not found in Ontario, which has universal health insurance coverage [21]. The different health systems can be categorised according to their characteristics [27-29]. In countries with a National Health System (NHS) type of system, care delivery is devolved to local health authorities, which are responsible for providing care within a delimited catchment area. In those countries, exposure to specialisation or personal continuity results from an organisational mechanism, i.e. the decision of the local health authority. In other European countries, care is delivered by multiple providers in a single catchment area and patients have more autonomy when it comes to choosing their care providers. In this second group of countries, exposure to specialisation or personal continuity generally results from a patient-clinician agreement at discharge from the hospital and the subsequent freedom of choice exercised by both clinicians and patients. We will refer to the systems of the second group of countries as regulated-market care systems (RMS) [27, 29]. However, the choice between personal continuity and specialisation after hospital discharge is likely to be influenced by multiple factors, e.g. the patient's individual characteristics and contextual factors related to the area and to hospital

organisation.

The aim of this study was to identify the predictors of patients' exposure to care approaches, i.e. to either personal continuity or specialisation, at discharge from a psychiatric unit. Due to the difference in care organisation across countries, we hypothesised that patient characteristics would influence the exposure to care approaches in RMS countries but not in NHS countries. We expected that, in RMS countries, patients with more complex mental-health and social-care needs would be more exposed to personal continuity, as the exposure is a shared clinical decision at hospital discharge. We also expected that, in NHS countries, exposure to care approaches would be determined by the hospital in which the patient is hospitalised, as the exposure results from an organisational mechanism.

2. Methods

2.1 Study design

This study is part of the "Comparing policy, framework, structure and effectiveness of Functional and Integrated systems of mental health care" project, COFI, funded by the European Commission (FP7) [30, 31]. In 2014-2015, data were collected on 7302 patients hospitalised in 57 psychiatric hospitals in the UK, Poland, Germany, Italy, and Belgium. After discharge, each patient was exposed to one of the two care approaches (personal continuity or specialisation) according to the usual local practice (natural experiment) [32].

The inclusion criteria for patients were i) being 18 years old or older, ii) having a main diagnosis of psychotic, mood, or anxiety and somatoform disorder (F2, F3, and F4 according to the ICD-10 classification), iii) being hospitalised in a general adult psychiatric hospital

unit, and iv) having the capacity to give signed informed consent [30]. Ethical committee approvals were obtained in each of the five countries that participated in the COFI project (ref: 14/NE/1017). The detailed protocol of the COFI project has already been published elsewhere [30].

2.2 Variables of interest

The outcome variable was the exposure to one of the two care approaches after hospital discharge, i.e. personal continuity or specialisation (intention to treat).

2.3 Predictors of exposure

Putative predictors of exposure to care approaches were selected, based on the existing literature [17, 19, 21, 22, 33]. The following socio-demographic and clinical characteristics of patients were included: age, gender, migrant status (whether born in the country of recruitment), homelessness, the main diagnosis category (ICD-10 classification), first admission versus repeated admission, and severity of symptoms. Severity was measured with the Clinical Global Impression Scale (CGI). The CGI is a scale from 1 (normal) to 7 (among the most severely ill patients), rated by clinicians [34]. The following socio-economic characteristics of patients were also included: employment status, educational status, receipt of state benefits, and social integration. Social integration was measured with the Objective Social Outcomes Index (SIX), which ranges from 0 (low social integration) to 6 (high social integration). The SIX includes four dimensions: employment, accommodation, living situation, and contacts with friends [35].

2.4 Admission hospital

Patients were exposed to one of the two care approaches at discharge from one of the 57 hospitals in the five countries. Hospitals were selected in different countries in order to have diversity in terms of urban, semi-urban, and rural areas. In addition, hospitals had to practice one of the two care approaches for at least a year [30]. In RMS countries, i.e. Germany, Poland, and Belgium, patients treated in the same hospital are likely to be exposed to one or the other care approach according to a shared decision between the patient and the clinician. The choice of one care approach was reported by the hospital clinician. In NHS countries, i.e. the UK and Italy, the care approach is an organisational decision and each geographic area has its preferred care approach. Therefore, patients treated in the same hospital are exposed to the same care approach. The care approach chosen was indicated in the clinical reports at the level of the organisation.

2.5 Data analysis

Descriptive statistics were calculated for the characteristics of patients exposed to personal continuity or specialisation. T-tests and Chi-square tests were performed to assess the significance of differences in the sample distribution between the two groups of patients.

Since the dependent variable is dichotomous, univariate and multivariate logistic regression models were performed to identify the predictors of exposure to personal continuity and specialisation in RMS and NHS countries. The multivariate logistic regression models were adjusted for country as a fixed factor, with the hospital of admission as a random intercept. Based on the multivariate logistic regression models, the proportion of variation in the models

that was due to the hospital of admission was calculated for each country (covariance component). The multivariate logistic regression models were then stratified by country.

All the statistical analyses were performed using SAS 9.3.

3. Results

3.1 International sample characteristics

The socio-demographic, clinical, and socio-economic characteristics of patients exposed to personal continuity or specialisation are shown in Table 1. Patients' age and gender did not differ significantly between the two care approaches. The severity of the patients' symptoms was slightly but significantly higher in the personal continuity group than in the specialisation group (mean score 4.5/7 vs mean score 4.3/7, $p = 0.02$) and there was a higher proportion of patients with a main diagnosis of psychotic disorder in the personal continuity group than in the specialisation group (41.2% vs 37.2%, $p < 0.01$). In terms of socio-economic status, there was a significantly higher proportion of patients with primary education level (18.8% vs 16.8%, $p < 0.01$), who were unemployed (75.4% vs 70.4%, $p < 0.01$), or in receipt of state benefits (57.0% vs 49.3%, $p < 0.01$) in the personal continuity group than in the specialisation group. The patients' objective social outcomes index was slightly but significantly lower in the personal continuity group than in the specialisation group (mean score 3.63/6 vs mean score 3.76/6, $p < 0.01$). There was also a significantly higher proportion of patients with migrant status in the personal continuity group (15.5% vs 12.6%, $p < 0.01$).

[Insert Table 1]

3.2 Predictors of exposure to care approaches after hospital discharge

The association between patient characteristics and exposure to personal continuity in RMS and NHS countries is shown in Table 2.

[Insert Table 2]

In RMS countries, results of univariate regressions showed that having a main diagnosis of psychotic disorder, being hospitalised for the first time, being unemployed, having a lower level of education, and receiving state benefits were associated with being exposed to personal continuity. In NHS countries, being unemployed, having a lower level of education, and receiving state benefits were also associated with exposure to personal continuity, as were having a lower level of social integration and being a migrant. Age, gender, housing status, and severity of symptoms were not significantly associated with a specific care approach either in RMS or NHS countries. These variables were therefore not included in the multivariate logistic regression models.

The multivariate regression model showed that having a main diagnosis of psychotic disorder remained significantly associated with exposure to personal continuity in RMS countries. In both RMS and NHS countries, the other clinical and socio-economic indicators were no longer significantly associated with exposure to personal continuity. This result was mainly explained by the fact that the exposure to care approaches was associated, for 31% in RMS countries and 91% in NHS countries, with the hospital of admission.

Major differences in the proportion of variation explained by the hospital of admission were found between RMS and NHS countries and across countries (see Table 3). The hospital of admission explained a higher percentage of exposure to care approaches in NHS countries (UK, Italy) than in RMS countries (Germany, Poland, Belgium).

[Insert Table 3]

3.3 Predictors of exposure to care approaches in each country

The associations between patient characteristics and exposure to personal continuity per country are shown in Table 4.

In Germany, results showed that having a main diagnosis of psychotic disorder and having a higher education status were significantly associated with exposure to personal continuity. In Poland and Belgium, patients' clinical and socio-economic indicators were not significantly associated with exposure to personal continuity.

However, some associations were also significant in the NHS countries. In the UK, having a lower level of education and being a migrant were significantly associated with exposure to personal continuity. After conducting sensitivity analyses on these results, it turned out that the effect of patients' migrant status on exposure to care approaches was due to a Trust located in East London. However, the association between patients' socio-economic status and exposure to care approaches remains significant after sensitivity analyses. In Italy, patients' characteristics were not significantly associated with exposure to personal continuity.

[Insert Table 4]

4. Discussion

4.1 Main results

Across the five countries participating in the study, patients exposed to the personal continuity care approach after discharge from a psychiatric hospital were more socially disadvantaged (more unemployed, having a lower level of education, and receiving state benefits) than patients exposed to specialisation. However, these individual predictors of exposure to care approaches were factored out by the hospital where patients were admitted.

In regulated-market system countries, even if exposure to care approaches was decided by patient-clinician agreement, the stronger predictor of exposure was not patient characteristics but the hospital of admission – except in Germany, where having a main diagnosis of psychotic disorder and a higher education status were significantly associated with exposure to personal continuity.

In addition, the influence of the hospital of admission on exposure to care approaches was different across countries. In NHS countries, we expected that exposure to a specific care approach would only be influenced by the geographic area and the decision of the local health provider. As expected, the hospital of admission explained a greater share of exposure to care approaches in NHS countries than in RMS countries. However, in the UK, hospitals that practise personal continuity have a more socially disadvantaged patient population than hospitals that practise specialisation.

4.2 Interpretation of the findings

The model of personal continuity, in which the same clinician is responsible for care between in- and outpatient settings, is applied more to socially disadvantaged patients. These results are consistent with the literature, which suggests that having the same clinician following patients over time and between services is more suited for, and preferred by, vulnerable patients with complex health and social needs [17, 18]. However, even in RMS countries where exposure to care approaches is decided through patient-clinician agreement, it is the hospital of admission, not patient characteristics, that predicts the care approach.

One study examined the determinants of primary clinicians' decisions on patient referral to the specialised sector [36]. The study concluded that such decisions were not based on the clinical status of patients only, but were influenced by a complex mix of patient, clinician, and health care structural characteristics. One systematic review also argued that studies exploring the influence of individual patient's characteristics on pathways to care had conflicting findings because of contextual differences across studies, e.g. the type of service and characteristics of the health care system [33]. These results underline the need for further analyses that will compare the outcomes of care approaches, i.e. personal continuity and specialisation, in different countries, taking into account local contexts. One possible explanation of these results is that exposure to care approaches in RMS countries is related to the care culture in different hospitals (care plan with gatekeeping arrangement, pilot project, care management, etc.) [33, 36, 37]. For example, the speciality referral rate is higher in services with gatekeeping plans [38, 39]. In Belgium, some hospitals are linked to a mobile mental health team and have staff in common to follow the patient at discharge from the hospital [40].

In RMS countries, the exception to this finding is Germany, where two patient characteristics predict exposure to personal continuity: having a main diagnosis of psychotic disorder as a clinical predictor and a higher education level as a socio-economic predictor. This result may illustrate the influence of health system characteristics on patients' exposure. On the one hand, most patients exposed to personal continuity in Germany were included by means of specific pilot projects on integrated care [41], including the so-called "Hamburg Model", which was specifically designed for patients with psychotic disorders [41]. On the other hand, private health insurance companies take on an important role in care accessibility in Germany. These companies are given some flexibility to define the benefits that they cover, which may include access to an integrated care programme [29, 42]. This might be an explanation for the higher level of education found in patients exposed to personal continuity in Germany.

In the UK, hospitals that practise personal continuity have a more socially disadvantaged patient population than hospitals that practice specialisation. This result suggests that even if exposure to care approaches is organisational and decided at the geographical level, procedures for organising care from inpatient to outpatient settings also partly result from the type of patients cared for. Further research is needed to understand this result.

In terms of practical implications, this study highlights the importance of organisational decisions within hospitals, as these have a major impact on patients' exposure to care approaches, regardless of the type of health care system.

4.3 Strengths and limitations

This study is currently the largest study to have compared the exposure of patients to personal continuity and specialisation at discharge from psychiatric hospitals across different countries. Moreover, exposure to care approaches was assessed within routine care practice, thanks to a naturalistic study design, which made it possible to avoid the novelty effect of experimental interventions [5, 43]. With its large sample size of more than 7000 patients, the study provided a high statistical power that made possible accurate estimates of the predictors of exposure at the hospital, country, and cross-country levels. Another strength of this study is the multiplicity of contexts assessed: the total sample is spread over 57 hospitals across five European countries with different systems of care organisation. Finally, we had very few missing data on the care approaches at discharge (0.14%), thus limiting any selection bias related to missing values.

However, the present study also has some limitations. The first limitation is related to the naturalistic design, with potential confounding variables. This limit was partially overcome because analyses were controlled for patients' individual characteristics and adjusted with hospitals as a random intercept to account for the clustering effect of hospitals in each country.

The second limitation is that the method of collecting data on exposure to care approaches was different between NHS and RMS countries. The choice of one care approach was reported by the hospital clinician in RMS countries and in the clinical reports at the level of the organisation in NHS countries. These two care approaches were the main exposure variable of the COFI project. Different procedures were used to ascertain the exposure to one or the other approach and misclassification bias is therefore unlikely [30]. Another limitation

is that the size of the sample varies between countries. Countries were added in fixed effect in the multivariate analyses to partially overcome this limitation, and some analyses were stratified by country. Another limitation concerns NHS countries, for which data on population characteristics and the socio-economic context of the regions where hospitals are located would have been useful for more detailed analysis of their influence on organisational choices within hospitals. Finally, a longitudinal design would have been relevant, to test the association between variations in patient characteristics and variations in care approaches over time.

4.4 Conclusion

Assessing the determinants of patients' exposure to care approaches at discharge from hospital is important because some care approaches are more suitable for, or preferred by, particular subgroups of patients with specific needs. Indeed, patients with complex psychosocial needs who have difficulties navigating between mental health and social services benefit more from personal continuity than specialisation [17, 18]. Conversely, patients with limited needs and able to navigate in and between services prefer, and benefit more from having the choice of different specialised clinicians [3, 16].

This study highlights the extent to which patient exposure to care approaches is hospital-dependent, even in countries where the care approach is decided through patient-clinician agreement. These results highlight a paradox because, in theory, models of care should stick to the needs of patients, but in practice, these models are mainly determined by the hospitals. This could highlight the difficulty of offering patients specific, individualised care pathways within the same hospital.

Future research should investigate what influences a hospital's decision on organising care from inpatient to outpatient settings. Indeed, even if the exposure is an organisational decision, it can reflect the needs of patients. This study suggests that organisational decisions in hospitals may be influenced by the socio-economic characteristics of their patient populations and are therefore not intended to address the needs and preferences of individuals but the needs of the population as a whole.

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Conflict of interest

None.

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Table 1: Socio-demographic and clinical characteristics of the sample

	Specialisation (n = 4371)	Personal Continuity (n = 2336)	T-test / Khi^2	P-value
	n/mean (%/SD)	n/mean (%/SD)		
Age (y.)	42.35 (14.50)	42.38 (13.90)	- 0.08	0.93
Gender (male)	2264 (51.81)	1260 (53.94)	2.77	0.09
Main diagnosis group (ICD-10)				
- Psychotic disorders (F2)	1627 (37.22)	962 (41.18)		
- Mood disorders (F3)	1840 (42.10)	953 (40.80)	12.26	<0.01
- Neurotic disorders (F4)	620 (14.18)	290 (12.41)		
- Others	284 (6.50)	131 (5.61)		
Severity of symptoms (CGI) (1 = low, 7 = high)	4.30 (1.10)	4.51 (1.16)	- 2.31	0.02
First admission (yes)	1496 (34.23)	749 (32.06)	3.19	0.07
Social integration (SIX score, 0 = low, 6 = high)	3.76 (1.40)	3.63 (1.39)	3.46	<0.01
Employment status (unemployed)	3078 (70.43)	1761 (75.42)	18.81	<0.01
Educational status				
- Primary	734 (16.80)	439 (18.80)	10.72	<0.01
- Secondary	1763 (40.34)	988 (42.31)		
- Higher	1873 (42.86)	908 (38.89)		
Receiving state benefits (yes)	2155 (49.32)	1331 (57.03)	36.15	<0.01
Homeless (yes)	199 (4.55)	128 (5.49)	2.87	0.09
Born in the country (no)	551 (12.61)	362 (15.50)	10.86	<0.01
Country				
- UK	1458 (33.36)	980 (41.95)		
- Germany	787 (18.01)	207 (8.86)	195.44	<0.01
- Italy	745 (14.04)	359 (15.37)		
- Poland	953 (21.80)	400 (17.12)		
- Belgium	428 (9.79)	390 (16.70)		

Descriptive statistics were performed after exclusion of missing data

Table 2: Association between patient characteristics and exposure to personal continuity at discharge from psychiatric stay in regulated-market system and National Health System countries

	RMS countries (Poland, Germany, Belgium)						NHS countries (UK, Italy)					
	Univariate regression models			Multivariate regression Model *			Univariate regression models			Multivariate regression Model *		
	OR	CI 95	p-value	OR	CI 95	p-value	OR	CI 95	p-value	OR	CI 95	p-value
Age (y.)	1.01	0.99-1.10	0.11	1.01	0.99-1.11	0.15	0.99	0.98-1.10	0.13	0.99	0.98-1.01	0.26
Gender (male, ref = female)	1.06	0.91-1.23	0.42	1.03	0.85-1.24	0.75	1.07	0.93-1.23	0.29	1.15	0.84-1.56	0.36
Diagnosis of psychosis (yes, ref = no)	1.36	1.37-1.59	<0.01	1.38	1.13-1.68	<0.01	1.13	0.98-1.30	0.07	0.90	0.65-1.26	0.56
Severity of symptoms (CGI)	1.05	0.99-1.13	0.09	1.03	0.93-1.14	0.13	1.01	0.95-1.08	0.63	1.02	0.89-1.17	0.69
First admission (yes, ref = no)	0.79	0.67-0.93	<0.01	0.89	0.73-1.09	0.26	1.01	0.87-1.16	0.92	0.95	0.68-1.32	0.77
Social integration (SIX score, 0 = low, 6 = high)	0.95	0.90-1.01	0.09	1.06	0.87-1.30	0.33	0.94	0.90-0.99	0.02	0.93	0.81-1.10	0.21
Employed (yes, ref = no)	0.72	0.61-0.85	<0.01	1.02	0.83-1.27	0.37	0.85	0.72-0.99	0.04	0.96	0.66-1.41	0.86
Educational status												
- Primary	1.35	1.11-1.64	<0.01	1.12	0.92-1.36	0.10	1.37	1.08-1.72	<0.01	1.21	0.89-1.22	0.49
- Secondary	1.14	0.95-1.36	0.14	0.99	0.73-1.12	0.23	1.24	1.07-1.44	<0.01	1.08	0.79-1.49	0.61
- Higher	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF
State benefits (yes, ref = no)	1.47	1.26-1.70	<0.01	1.04	0.85-1.28	0.69	1.24	1.08-1.42	0.002	1.10	0.76-1.58	0.60
Homeless (yes, ref = no)	1.05	0.70-1.57	0.80	0.93	0.52-1.63	0.78	0.76	0.57-1.01	0.05	0.63	0.43-1.19	0.15
Born in the country (no, ref = yes)	1.09	0.84-1.43	0.50	1.08	0.79-1.47	0.62	1.26	1.05-1.49	0.009	1.15	0.92-1.49	0.17

* Model adjusted for all variables in the model, for country as a fixed factor and hospital as a random intercept

Table 3: Hospital of admission and exposure to care approaches in the multivariate regression model: intra-class correlation coefficient

	RMS countries			NHS countries	
Intra-class correlation	31%			91%	
	Germany	Poland	Belgium	UK	Italy
	11%	44%	12%	92%	89%

Intra-class correlation is computed as: $\rho = \frac{\tau_0^2}{\tau_0^2 + \frac{\pi^2}{3}}$

Table 4: Association between patient characteristics and personal continuity in the five countries

	Multivariate regression models									
	RMS countries						NHS countries			
	Germany (n=1061)		Poland (n=1374)		Belgium (n=1043)		UK (n=2706)		Italy (n=1118)	
	OR	p-value	OR	p-value	OR	p-value	OR	p-value	OR	p-value
Age (y.)	1.02	0.98	1.01	0.29	1.01	0.16	0.99	0.32	0.98	0.27
Gender (male, ref = female)	1.06	0.70	1.08	0.60	0.99	0.95	1.04	0.81	1.04	0.34
Diagnosis of psychosis (yes, ref = no)	1.85	<0.01	1.19	0.31	1.12	0.51	1.14	0.47	0.81	0.07
Severity of symptoms (CGI)	1.07	0.45	1.17	0.07	1.14	0.14	0.99	0.94	1.18	0.51
First admission (yes, ref = no)	0.70	0.08	0.84	0.35	1.14	0.42	1.16	0.41	0.43	0.07
Social integration (SIX score)	1.16	0.12	1.11	0.19	0.98	0.81	0.98	0.90	1.04	0.85
Employed (yes, ref = no)	0.79	0.37	0.97	0.68	1.39	0.21	0.88	0.69	1.05	0.92
Educational status										
- Primary	0.58	0.02	1.02	0.91	1.01	0.98	2.57	<0.01	0.71	0.21
- Secondary	0.59	<0.01	1.03	0.90	0.94	0.74	1.21	0.31	0.56	0.13
- Higher	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF
Receiving benefits (yes, ref = no)	0.99	0.97	1.01	0.93	1.07	0.69	1.01	0.98	1.17	0.69
Homeless (yes, ref = no)	0.69	0.43	0.75	0.29	1.69	0.21	0.72	0.45	0.89	0.24
Born in the country (no, ref = yes)	1.05	0.83	0.97	0.96	1.16	0.49	1.95	<0.01	0.49	0.16

* Model adjusted for all variables in the model and hospital as a random intercept